



Technical Service Manual

DISHWASHERS

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Safety Information

Read the entire manual before attempting to Install, Assemble or Operate this product. Pay attention to all Warnings, Cautions and Notes. Failure to do so could result in serious personal injury and /or equipment damage.

DEFINITIONS

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

PRECAUTIONS

Used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTE

Used to address practices not related to personal injury. Information that requires special emphasis.

IMPORTANT

Information that requires special attention from the user.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

1. Purpose of this Manual

The purpose of this Service Manual is to provide Service Technicians with technical information regarding the new range of dishwashers and to give a description of the error codes and service functionality.

This range includes the following User Interface electronics:

- FGCD2456
- FGID2474
- FPID2495
- FPID2497
- EI24CD35
- EI24ID30
- EI24ID50
- EW24ID70
- EW24ID80
- ICON

This Manual describes:

- General Characteristics
- Control Panel and Programs
- Technical Characteristics
- Guide to Diagnostics



PRECAUTIONS

Electrical appliances must be serviced only by qualified Service Technicians.

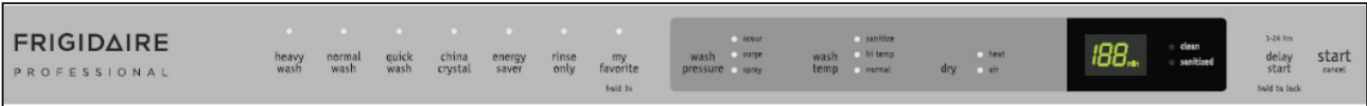
Always remove the plug from the power socket before touching the internal components.

2. Styling Overview

FGCD2456QW/FGCD2456QB/FGCD2456QF



FGID2474QW/FGID2474QB/FGID2474QF/FPID2495QF/FPID2497QF



EI24CD35QW/EI24CD35QB/EI24CD35QS



EI24ID30QW/EI24ID30QB/EI24ID30QS



EI24ID50QS



E24ID74QPS/EW24ID70QT/EW24ID80QS



3. Service Functions

3.1 Service Tips

These models are equipped with Service functions which help service technicians diagnose the machine and find issues more easily and directly.

The Service functions include:

- Error code read out: The error codes of the last 3 errors shall be displayed
- Actuator Test: The actuators can be turned on one-by-one
- LED Test: The test turns on all LEDs and the display on the panel. Also, this test will erase all saved error codes
- Functional Test Cycle: A short wash cycle which involves all actuators

When diagnosing a machine, it is recommended that the service technician should follow these steps in order:

Step 1: Run the Error code read out. Record the 3 error codes and look up their meanings.

Step 2: Run the Actuator Test. Pay attention to the actuators which relate to the errors found in Step 1.

Step 3: Run the LED Test. The saved error codes will be erased during this test.

Step 4: Run a test cycle.

Step 5: Run the Error code read out again.

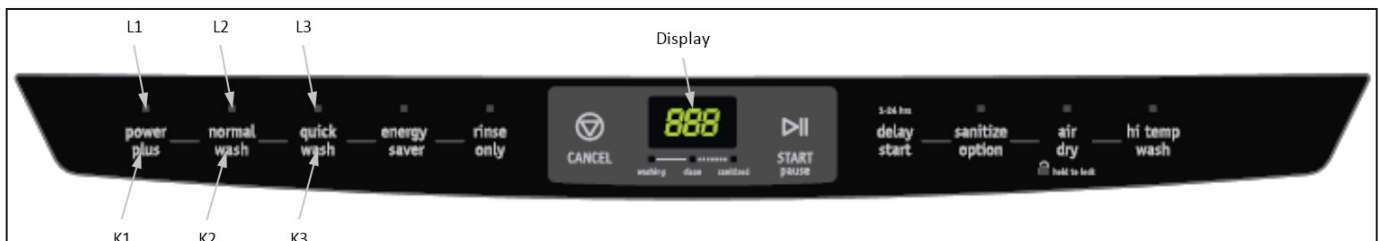
If necessary, repeat the steps.

3.2 Location of LEDs and Buttons

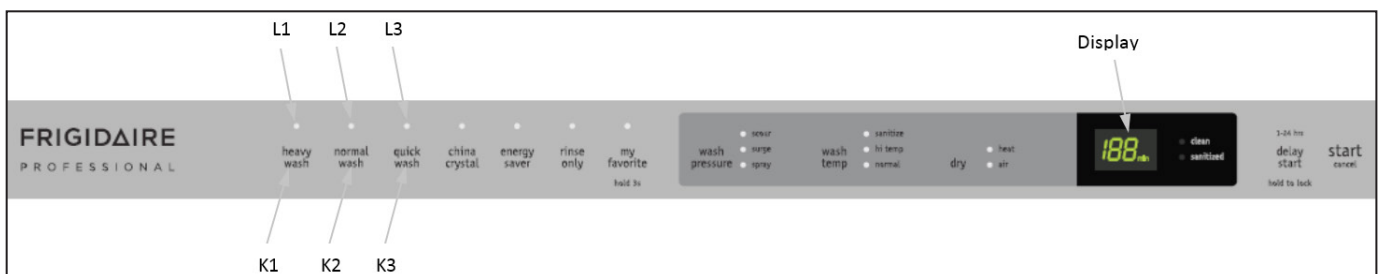
There are only 3 buttons involved in the service function test. For all models in the Durham range, the first 3 buttons from the left are used for input. The output of the service functions are shown by the LEDs above these 3 buttons and in the display.

For models not equipped with a display, 2 additional LEDs on the right-hand-side of the control panel are used for output.

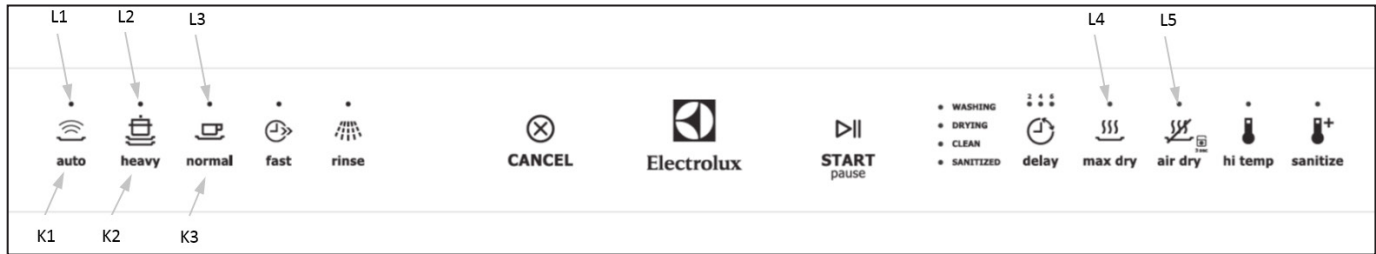
FGCD2456QW/FGCD2456QB/FGCD2456QF



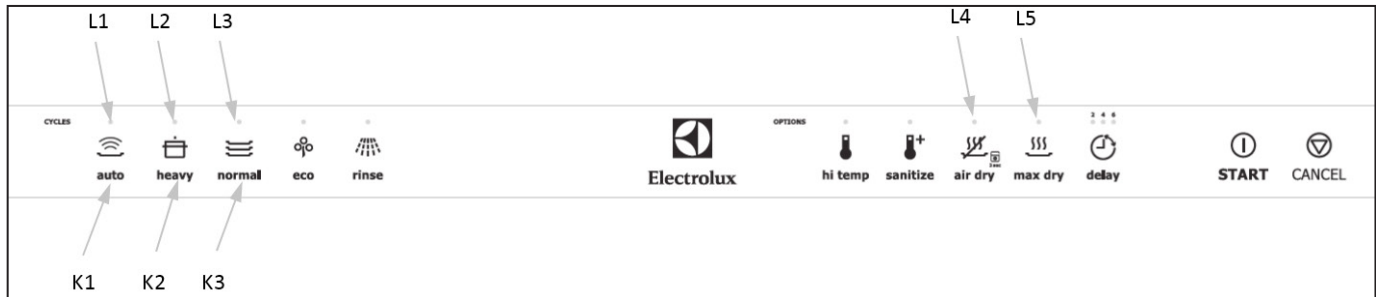
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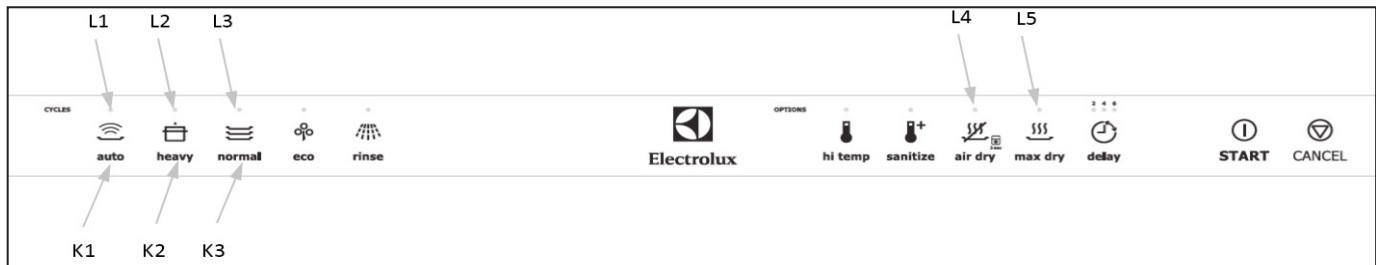
EI24ID20QW/EI24ID20QB/EI24ID20QS



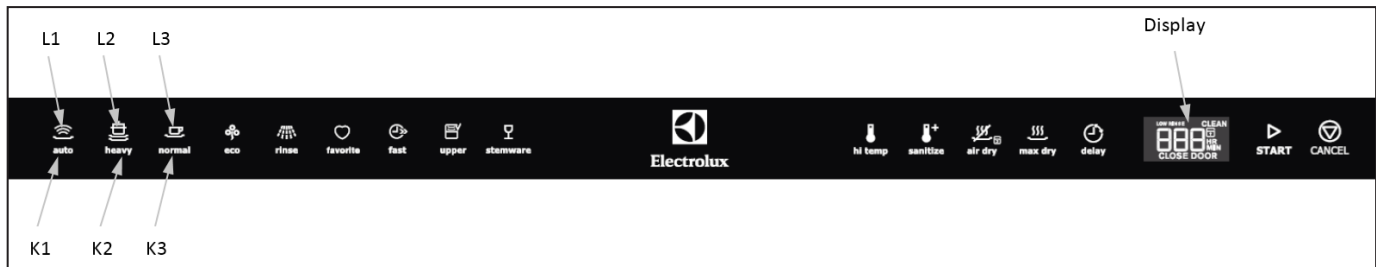
EI24ID30QW/EI24ID30QB/EI24ID30QS



EI24ID50QS



E24ID74QPS/EW24ID70QT/EW24ID80QS



3.3 Program Presentation Mode

The Service mode shall only be accessible from the Program Preparation Mode. The machine is in the Program Preparation Mode when a program is selected but not started.

If the machine is not in the Program Preparation Mode, pressing the CANCEL button will bring the machine into this mode.

Pressing the CANCEL button may start the 1-minute draining cycle. If this happens, close the door and wait. Open the door at the end of the draining cycle and the machine will be in the Program Preparation Mode.

3.4 Access Service Mode

In all models in the Durham range, the full function Service Mode includes:

- Error code read out
- Actuator Test
- LED Test
- Functional Test Cycle

According to hardware configuration of the dishwasher and the marketing requirements, Service Mode may vary in individual models and can be a subset of the above listed functions.

To access Service Mode, make sure the machine is in the Program Preparation Mode, press and hold K1 and K3, simultaneously for at least 5 seconds. The LEDs L1, L2 and L3 blink to indicate the Service Mode is accessed. All other LEDs and the display (if equipped) are OFF.

Machine is now in the Service Menu Mode. This mode can be exit by pressing the CANCEL button, or 60 seconds after the last button is pressed.

3.5 Error Code Read Out

After accessing the Service mode (L1, L2 and L3 blinking):

1. Press button K1 to show the first error code.
 - L1 blinks to indicate the machine is in the Error Code Reading Mode.
 - **The first error code saved in memory is shown in the display** if the model has a display. If the model is not equipped with a display, the error code is shown by the LEDs L4 and L5. Details of the error code are listed in the Error Codes section of this document
2. Pressing button K1 again will show the second error code.
3. Pressing button K1 once more will show the third error code.
4. The Error Code Reading Mode shall exit by pressing the CANCEL button or waiting 60 seconds after the last button is pressed.

3.6 Actuator Test

When the machine is in the Error Code Reading Mode and showing the third error code, pressing K1 again will switch the dishwasher into Actuator Test Mode.

1. Press button K1 for the fourth time to move into the Actuator Test Mode. Pressing the button K1 repeatedly will sequentially activate one actuator at a time.
 - L1 will turn off. L2 will blink to indicate the machine is in the Actuator Test Mode.
 - The activated actuator number is shown in the display, if the model has a display. If the model is not equipped with a display, the actuator number is shown by the number of blinks of L4. For example, the actuator number 5 will cause L4 to flash a total of 5 times, pause, then repeat this. The following table provides the actuator details:

NUMBER OF K1 PRESSED	ACTUATOR	COMMENT
5	Drain Pump	–
6	Inlet Valve	Off when water level is reached
7	Heater	On only if water level is reached
8	Wash Pump	–
9	Dispenser	–

- Pressing the button K1 when the actuator number 10 is activated will cause the machine to cycle back to Error Code Reading and show the first error code saved in memory.
- The Actuator Test Mode will exit by pressing the CANCEL button or waiting 60 seconds after the last button is pressed.

3.7 LED Test

After accessing the Service Mode (L1, L2 and L3 blinking):

- Pressing the button K2 will start the following function.
 - All used LEDS and display (digits show “8:88”) blinks 5 seconds on 1 second off.
 - If a buzzer is equipped, it will beep for 5 seconds.
 - The error codes saved in memory are erased.**
- The LED Test mode shall exit by pressing the CANCEL button, or waiting 60 seconds after the last button is pressed.

3.8 Functional Test Cycle

After accessing the Service Mode (L1, L2 and L3 blinking):

- Pressing the button K3 will start the Functional Test Cycle. The cycle will not start if the door is open.
 - L3 will blink for the duration of the cycle.
 - The display will show the remaining time of the cycle.
- The test cycle runs as a normal wash cycle. It shall be cancelled by pressing the CANCEL button or by allowing the Functional Test Cycle to run to its end.

4.1 Error Management

In Durham range, the error codes are defined in families of errors and current errors, displayed as:

iXY

i = error indication

X = family of the error

Y = current error

4.2 Display of Error Codes

The complete error code will be stored among the three errors that can be stored by the appliance. A new error code is only stored if it differs from the last one stored. The three most recent error codes can be displayed only in Service Mode or using the Sidekick tool.

Only the error family codes are displayed to the user. The complete error codes are displayed in Service Mode.

Appliances with a display will show the complete error codes as above format.

Appliances without a display (EDW4905 and EDW5905) will show the error codes by a number of flashes of 2 indicator LEDs (L4 and L5). The number to flashing of the left-hand-side LED (L4) displays family code and the right-hand-side LED (L5) displays the current error. For example, error code i41 = L4 flashes 4 times... L5 flashes once... L4 flashes 4 times... L5 flashes once...

4.3 Error Code Description

“i00” code family: Low mains voltage

The electronic board makes sure the dishwasher operates within certain voltage limits. If during a cycle the voltage drops below the lowest limit, the electronic board suspends all loads and interrupts the cycle under way. The “i00” alarm is then triggered.

- The lowest main voltage threshold is 180 Volt
- If the voltage goes back to over 186 Volt, the electronic board cancels the error status and the

cycle resumes. The “i00” alarm is also deleted.

- If the mains voltage continues to exceed the maximum threshold, the electronic board does not do anything.

IMPORTANT: the “i00” alarm is not stored and cannot therefore be read in Service Mode.

“i10” Code - family: Water Tap Closed

“i10” code: during static filling

This error code is used to display problems with the water inlet tap being closed at the beginning of the program. It is set up to detect problems during the static water filling. A drain phase is performed before the error is displayed to the user.

- Acoustic signal and visual error, depending on the appliance customization; the program can be restarted
- The water level defined is not reached within the time limit set
- The time limit set starts when the fill Solenoid Valve is opened
- The time limit set is reset when the fill Solenoid Valve is closed
- The water will first be drained before an error is displayed to the user
- Time limit set: Normal 90 sec; Test cycle = 30 sec (times could differ as they are defined in the MCF).

“i11” code: during dynamic filling

- Acoustic signal and visual error, depending on the appliance customization; the program can be restarted
- The water level defined is not reached within the time limit set
- The time limit set starts when the fill Solenoid Valve is opened
- The time limit set is reset when the fill Solenoid Valve is closed
- The water will first be drained before an error is displayed to the user
- Time limit set: Normal 120 sec; Test cycle = 60 sec (times could differ as they are defined in the washing cycle specifications).

"i20" Code - family: Draining Problem

"i20"-Code: Fails to drain

- Acoustic signal and visual error, depending on the appliance customization; the program can be restarted
- The level switch restore point is not reached within the time limit set
- The time limit set starts when the drain pump is activated
- The time limit set is reset when the drain pump stops normally
- Time limit set: Normal 90 sec; Test cycle = 60 sec.

"i30" Codes - family: Aqua Control

"i30" code: water detected from aqua control sensor

- Acoustic signal and visual error, depending on the appliance customization; the program is restarted automatically in this error condition
- If this error condition occurs, the drain pump is activated
- Time limit set: 10 sec.

"i40" Codes - family: Analogue pressure sensor problem

"i41" - code: No pressure sensor signal

- The error is set if the sensor signal is lost for more than 1s
- Abort program and display error.

"i42" - code: Calibration invalid, pressure signal too noisy

- The warning is set if the sensor signal is not stable enough for calibration or if the signal is out of range for an empty sump
- The signal noise level for calibration is defined in

MCF.

"i43" - code: Pressure sensor signal too high

- The error is set if the sensor signal is out of range, signal high for more than 1 s
- The signal range is defined in MCF
- Abort program and display error.

"i44" - code: Pressure sensor signal too low

- The error is set if the sensor signal is out of range, signal low for more than 1 s
- The signal range is defined in MCF
- Abort program and display error.

"i45" - code: Calibration invalid, pressure signal too low

- The warning is set if the sensor signal is out of range for an empty dw, signal low
- The signal range for calibration is defined in MCF.

"i46" - code: Calibration invalid, pressure signal too high

- The warning is set if the sensor signal is out of range for an empty dw, signal high
- The signal range for calibration is defined in MCF.

"i50" Code - family: Washing Motor Problem

"i51" - code: Asynchronous motor problem

- Acoustic signal and visual error, depending on the appliance customisation; the programme is suspended
- The washing pump runs without being activated by the software the cause is short-circuit
- The heating element is not activated
- If the error occurs, the fill Solenoid Valve is activated up to the level pressure switch tripping

point, and then the cycle is suspended

- Time limit set: 8 sec.

"i52" – code: WP BLDC motor – abnormal high current detected

- Hardware supervising – will be set when abnormal high current of about 1.3 amps are detected.

"i53" – code: WP BLDC motor – over current

- Error will be set when the max. allowed current will be detected higher than the max allowed current of 1.0 A.

"i54" – code: WP will not follow/ rotor is locked

- Error will be set when the motor locked condition is detected during start of motor and also during the running motor; reasons can be dirt, too high load, mechanical problems on impeller.

"i55" – code: DC Link overvoltage

- Error is set when the DC Link voltage on power control board is greater than 392 V DC and will be cleared when dropping under 390 V DC.

"i56" – code: DC Link under voltage

- Error is set when the Vbat voltage on motor control board will be detected lower than 225 V DC and will be cleared if voltage is greater than 260 V DC.

"i57" – code: MCB Vbat voltage plausibility / ADC Fault

- Error will be set if the difference between current samples are less than 0.03363 [A] for 0.5s.

"i58" – code: WP motor plug connection

- Error will be set if motor connection is detected wrong based on motor currents measurements. If currents are inside the thresholds (+/- 21 mA); de-

bounce is set to 1.5 seconds

- This code is also possible if a phase is detached or if a winding inside the motor is broken.

"i59"– code: WP current read ADC - fault

- Error is set if there is detected a fault in the current reading chain on MCB; incl. ADC conversion
- It is verified by the current sum of the three motor phases which should be nearly zero; if the sum is higher than 40mA for longer than 300 ms than the assumption is that something is wrong.

"i5A"– code: Over temperature or Overload

- Error is set if load is 0.68 A for 10 s for the wash pump or 0.55 A for 10 s for the drain pump.

"i5B"– code: WP/DP current plausibility

- Error is set if currents are not changing within 2.5 s with less than 0.0275 A for WP
- Error is set if currents are not changing within 0.5 s with less than 0.03363 A for DP.

"i5C"– code: DP BLDC motor – abnormal high current detected

- Hardware supervising – will be set when abnormal high current of about 0.7 amps are detected.

"i5D"– code: DP BLDC motor – high current SW

- Error will be set when the maximum allowed current will be detected higher than the maximum allowed current of 0.550 A.

"i5E"– code: DP will not follow/ rotor is locked

- Error will be set when the motor blocked condition is detected during start of motor and also during the running motor; reasons can be dirt, too high load, mechanical problems on impeller.

"i5F" – code: DP motor plug connection

- Error will be set if motor connection is detected wrong based on motor currents measurements. If currents are inside the thresholds (+/- 22 mA); debounce is set to 1.6 seconds
- This code is also possible if a phase is detached or if a winding inside the motor is broken.

"i60" Code - family: Heating Element Problem

"i60" – code: heating

- The error is stored and displayed only in service mode; the washing programme continues without the activation of the heating element
- During the heating phases, the rise in temperature is monitored with an update every 3 min.
- Within these 3 minutes, the temperature must rise by at least 1 °C.

"i61" – code: heating over temperature

- If water temperature is detected higher than 78°C, cycle is stopped.

"i70" Code - family: Thermistor problem

"i70" – code: NTC sensor value out of range

- The error is stored and displayed only in service mode; the washing program continues without the activation of the heating element
- Monitoring starts immediately after the program has been started
- The voltage measured at the ends of the NTC must be between 0.04 and 4.7 V
- Time limit set: 10 seconds.

"i80" Code - family: Auto Door Opener

"i80" – code: Auto door opener malfunction

- The error is set if the auto door opener sense signal indicates that it has left the normal position unintentionally while running a cycle,
- Or if the auto door opener times out without reaching starting position three times while retracting.
- Timeouts are defined in MCF
- Abort program and display error

"i81" – code: Auto door opener warning

- The warning is set if the auto door opener sense signal indicates that it has left the normal position unintentionally,
- Or if the auto door opener times out while opening the door and does not leave the starting position,
- Or if the auto door opener reverses direction while opening the door and reach the inside position before expected (door blocked),
- Or if the auto door opener times out while retracting.
- Timeouts are defined in MCF
- The warning is not displayed, the cycle continues

"i90" Code - family: Configuration Problem

"i91" – code: checksum MCF

- No washing program start is possible, can be resolved by turning the appliance Off and back to On again.
- The display board does not satisfy the identification requests of the main board.

"i92" – code: checksum CCF

- The error is signalled if the configuration control of the washing cycles provided erroneous results.

"i93" – code: checksum UIDATA

- The error is signalled if the configuration control of the UI configuration data provided erroneous results.

"i94" – code: UIDATA version mismatch

- The error is signalled if the UIDATA provided in configuration file mismatches the attached UI board.

"i95" – code: UIDATA checksum mismatch

- The error is signalled if the UIDATA checksum type provided in configuration file mismatches with the attached UI board.

"iB0" Code - family : Sensor Problem

"iB0" – code: turbidity sensor

- The error is set if the calibration procedure is not completed after 15 sec.
- The washing program will run as though the dirt value to be considered is high

"iC0" Code - family: Communication Problem

"iC0" – code: user interface communication

- The error signal is displayed if the communication system does not recognize any display board.

"iC1" – code: MACS bus communication

- After three attempts to establish communication, an error is signalled in the hardware control

"iC2" – Code: ADSI communication

- The washing programme is suspended but it can be restarted if the error conditions no longer apply

"iC3" – Code: Communication between the power board and the Motor Control Board

- The error is signalled if the communication between the Motherboard and the Motor Control Board does not start
- Acoustic signal and visual error, depending on the appliance customization; the washing program is restarted automatically if the error conditions no longer apply.

"iD0" Code - family: Tacho Problem

"iD0" – code: no signal

- The error is stored and displayed only in service mode; there is a new control for each new phase.
- If the washing pump is activated but there is no tacho signal for 30 seconds then the motor speed is set to full speed and the heating element is not activated.

"iD1" – code: critical signal

- The error is stored and displayed only in service mode.
- If the washing pump is activated but there is no tacho signal for 5 seconds then the heating element is temporarily deactivated. If after another 30 seconds there is still no signal the appliance displays an error code iD0.

“iE0” – family: flow controller problem

“iE0” – code: flow control position (spray arm level)

- The error is stored and displayed only in service mode; there is a new control for each new phase.
- The error is signalled if the desired position of the flow controller is not reached after 120 seconds; the heating element is deactivated.
- If the signal from the flow controller does not change after 15 seconds, the software suspends the positioning for 2 seconds and resumes after another max 120 seconds.

“iF0” Code - family: water level problem

“iF0” – Code: overfilling detected

- The error is stored and displayed only in service mode; the program continues.
- The error situation is recognized when the total filling times exceed the limits.
- The times are accumulated at each subsequent filling and reset every time the drain is activated.
- If the error is detected, the heating element is not activated and the subsequent fillings are ignored.

“iF1” – code: high water level

- The error is stored and displayed only in service mode.
- The error condition is recognized if the safety water level is exceeded for more than 4 seconds.
- A drain phase is activated until the water level drops below the safety level.
- The washing program continues only if this condition is achieved

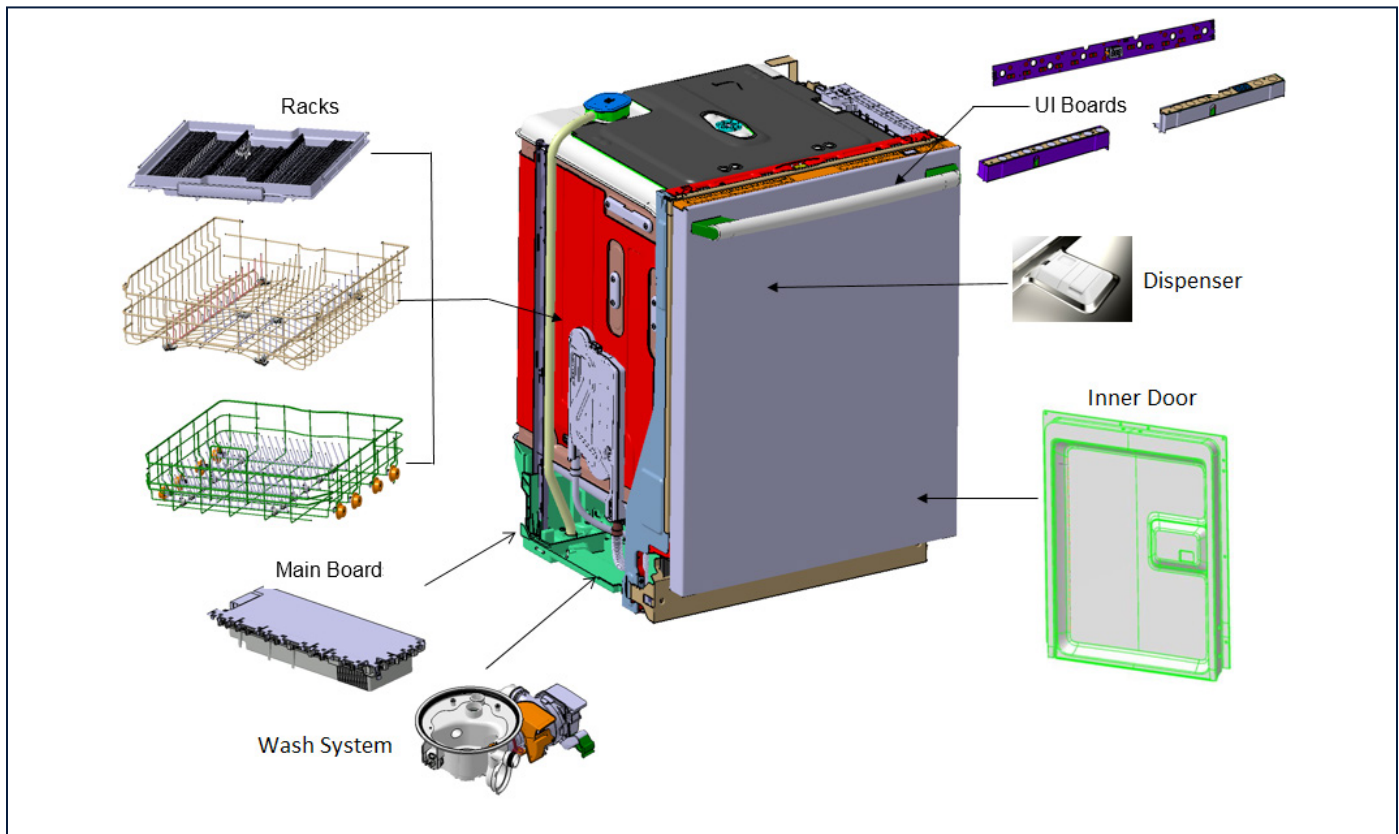
4.4 List of Error Codes

SERVICE ERROR CODE	REASON	UNIT RESPONSE INDICATION DURING FAILURE	CHECK WHEN FAILURE APPEARS.
i00	PCB Failure UI or PCB Loose Connection	User interface will be OFF.	1. Check main power supply 2. Check UI and PCB connections
i10	A low fill has been detected.	Cycle will pause requiring user to restart.	1. Water tap or Main water supply OFF? 2. Electrical connection of water valve. 3. Blocked water or pinched water supply line.
i20	Slow or no drain problem.	Cycle will pause requiring user to restart.	1. Check and ensure filter is clean. 2. Check for buildup of soils in sump. 3. Ensure check valve is functioning properly. 4. Make sure that the drain pump is not blocked and operating normally. 5. Check drain hose Installation and for any obstructions. 6. Check for a pinched or blocked drain hose. 7. Check that the knockout plug on the disposer was removed during installation.

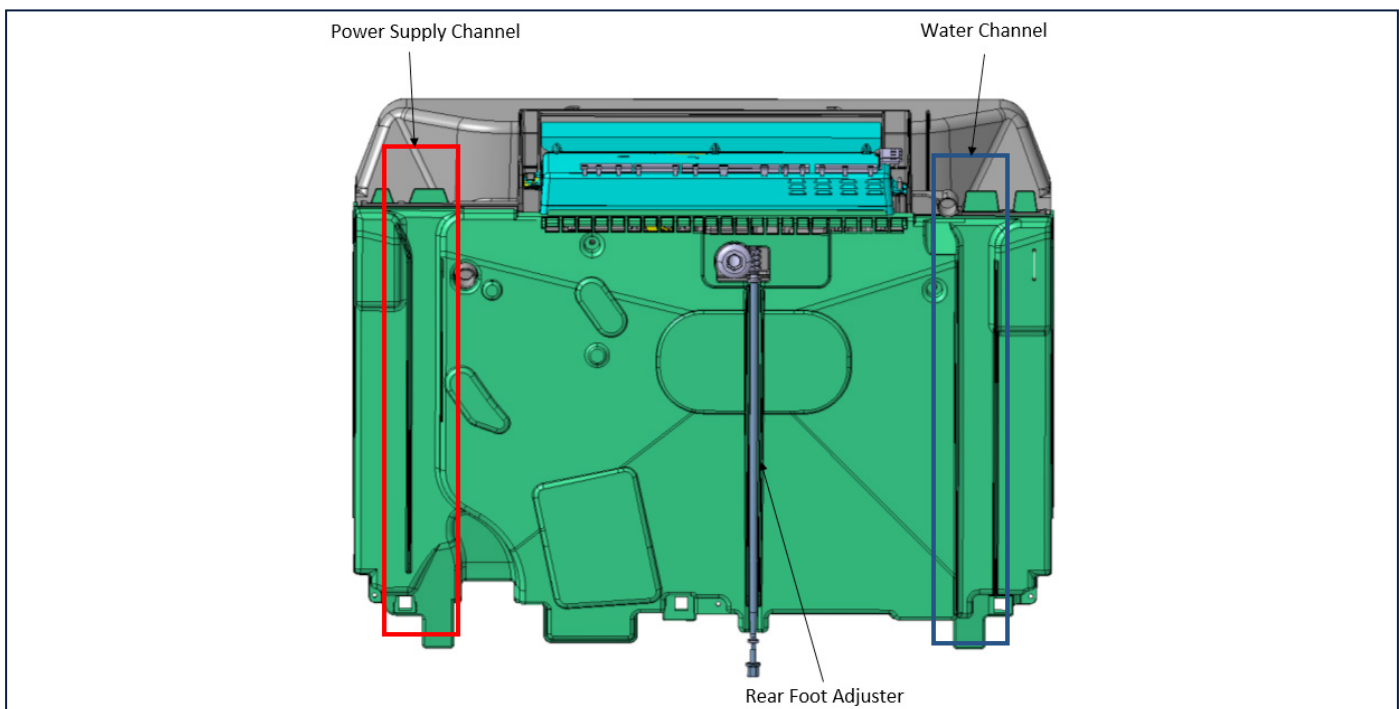
SERVICE ERROR CODE	REASON	UNIT REPONSE INDICATION DURING FAILURE	CHECK WHEN FAILURE APPEARS.
i30	A leak or overflow of water has been detected in the bottom pan.	Unit will stop and drain pump will continuously run.	1. Check for loose sump hoses or leaking within sump area. 2. Check for overflow float is in the lower position and freely moves. 3. Check for buildup of soils in sump.
i40	Pressure sensor failure	Unit will shut off displaying failure.	1. Check sensor wire harness and connection to pcb. 2. Replace pressure sensor.
i50	A problem has been detected with the drain or wash motor.	Unit will shut off displaying failure.	1. Check wash and drain motor wire harness and connections to pcb. 2. Replace defective motor.
i60	A problem has been detected with the water heating system	The heating element will be turned off during the running of any cycle.	1. Check heater connections and wire harness. 2. Check heater resistance. 3. Replace wash motor assembly which includes heater.
i70	A problem has been detected with the thermistor within the turbidity sensor.	The heating element will be turned off during the running of any cycle.	Replace turbidity sensor.
i90	A problem has been detected with the software on UI and powerboard.	UI is unresponsive	Replace both the UI and powerboard.
iB0	A problem has been detected with Turbidity sensor.	Turbidity not operating properly.	1. Check turbidity connection and wire harness. 2. Replace turbidity sensor.
iC0	A problem has been detected with the electronic control system.	Unit will stop and retry to gain communication to UI.	1. Check UI connection and wire harness. 2. Replace UI.
iD0	A problem has been detected with the wash motor.	Wash motor is not operating at proper speed.	1. Check connection and wire harness to wash motor. 2. Replace wash motor.
iE0	Flow control positioning	Heating element will be switched OFF	1. FC type and anc installed 2. Check connection/wire harness.
iF0	A problem has been detected the with water fill level.	Cycle will pause requiring user to restart.	1. Check for buildup of soils in sump. 2. Replace pressure sensor.

5. Technical Details

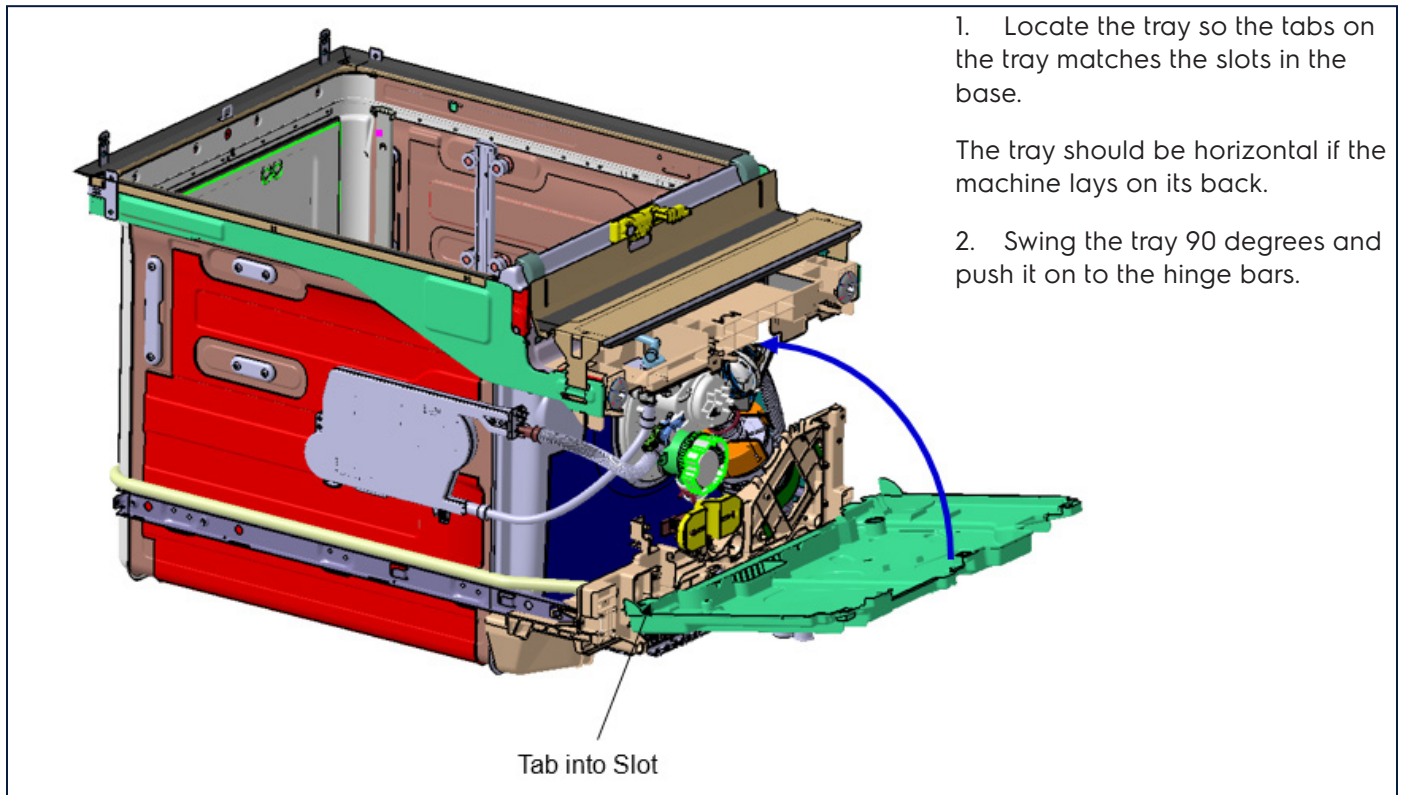
5.1 Product Overview



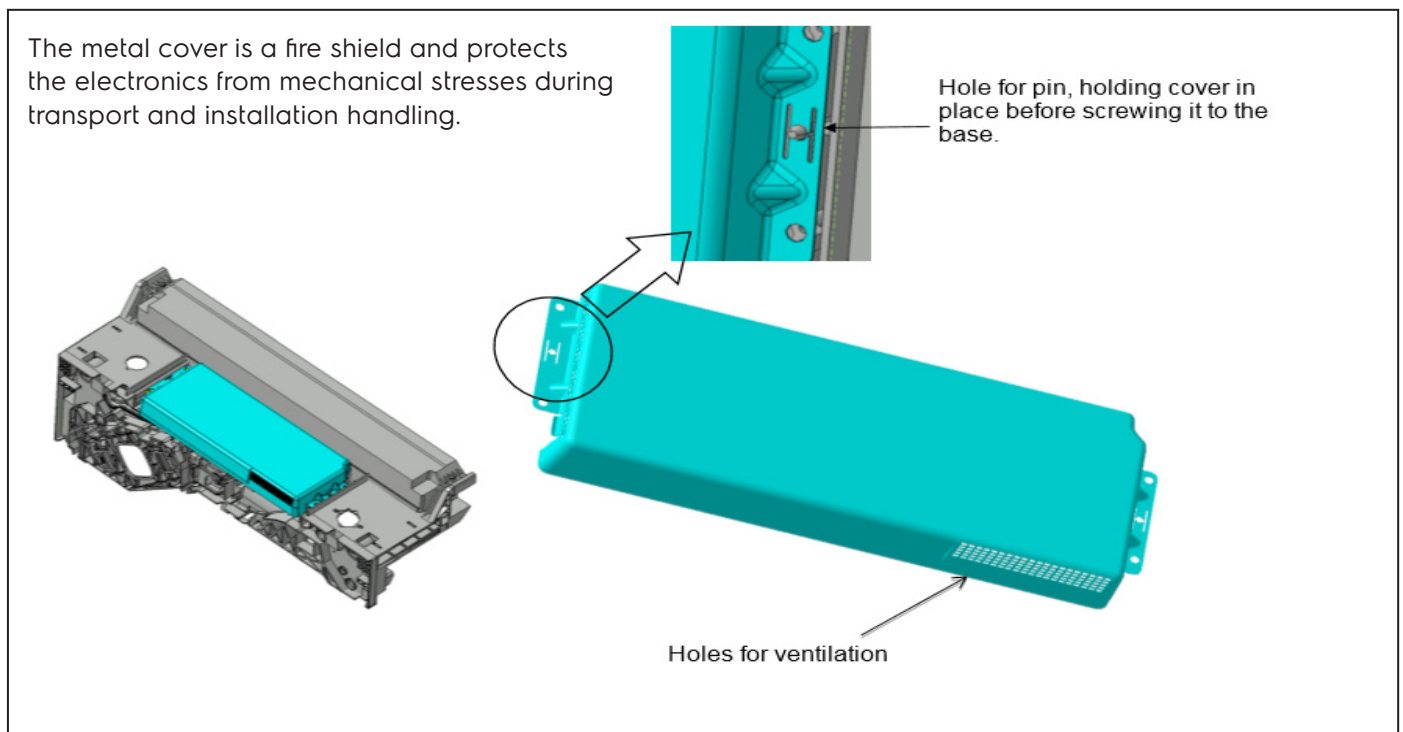
5.2 Base Details - Rear Side



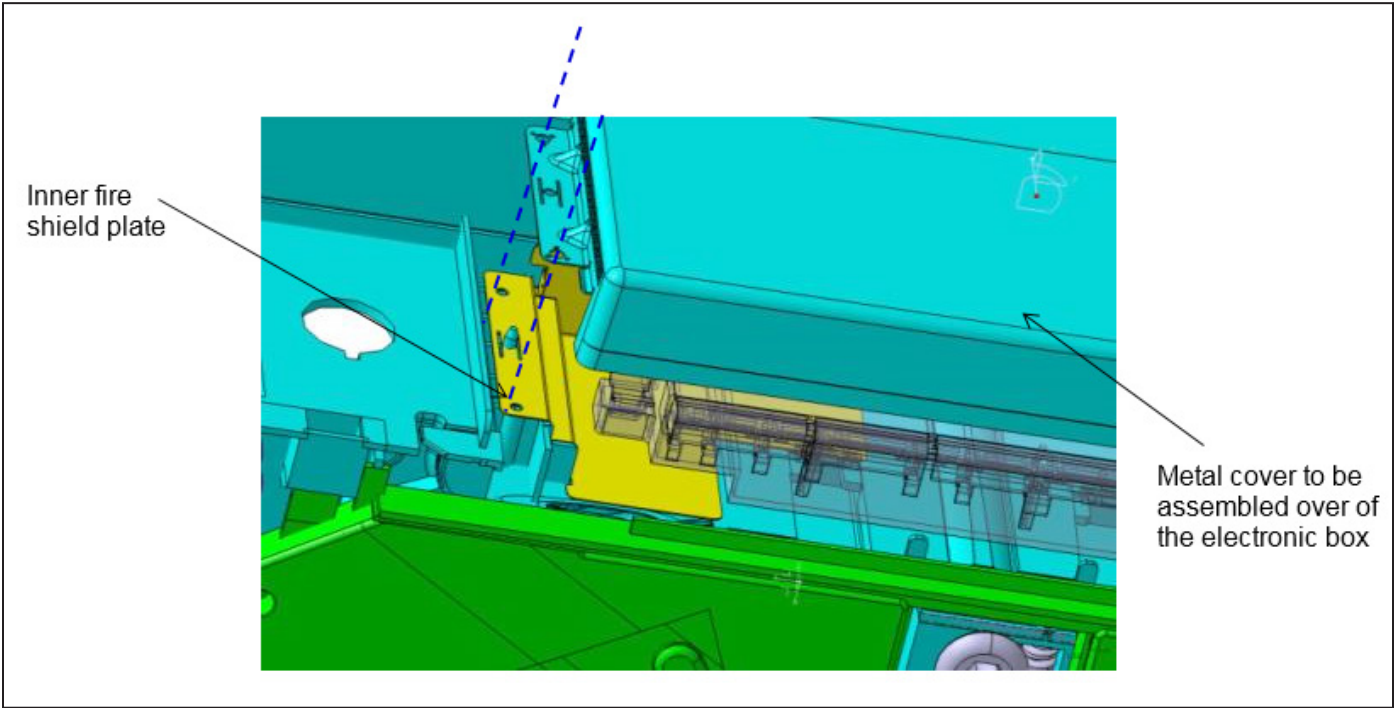
5.3 Assembly Instructions of the Bottom Tray



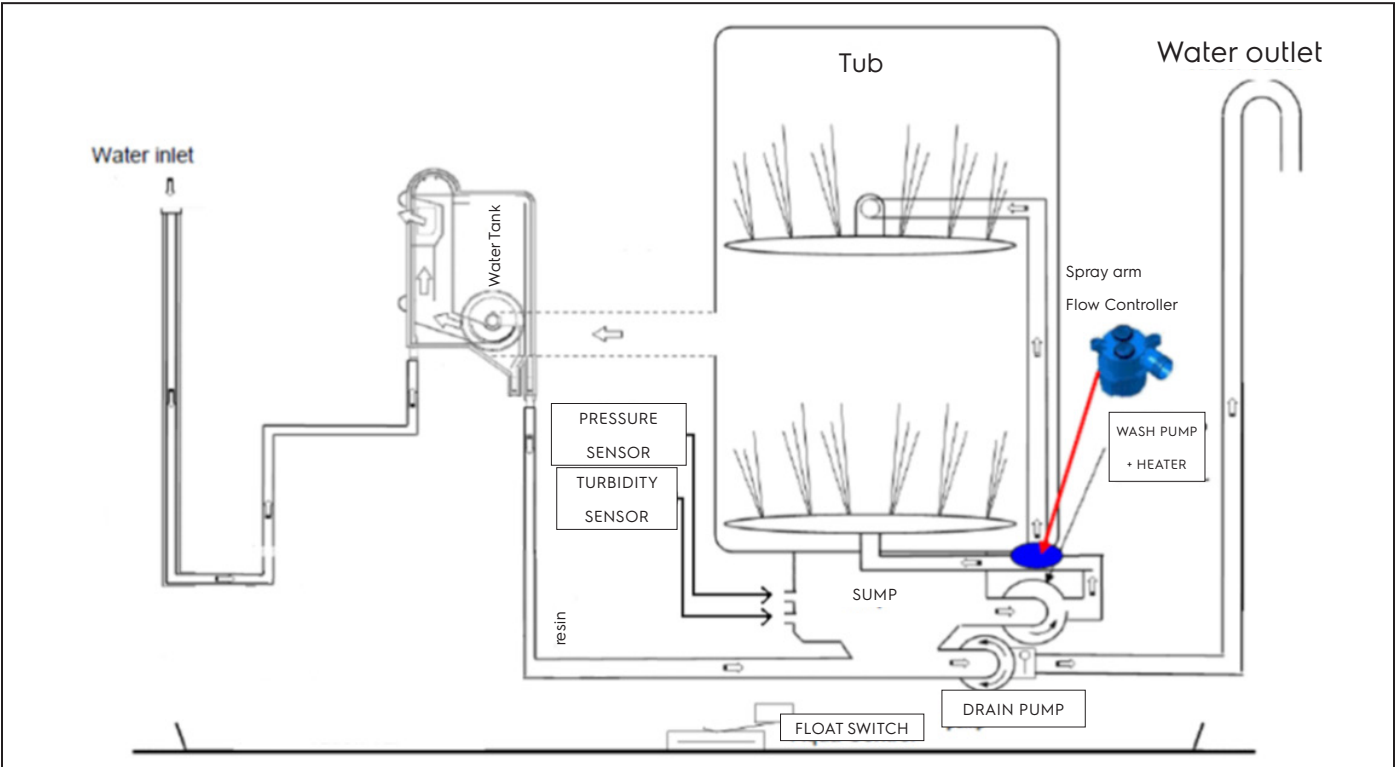
5.4 Metal Cover for Main Board



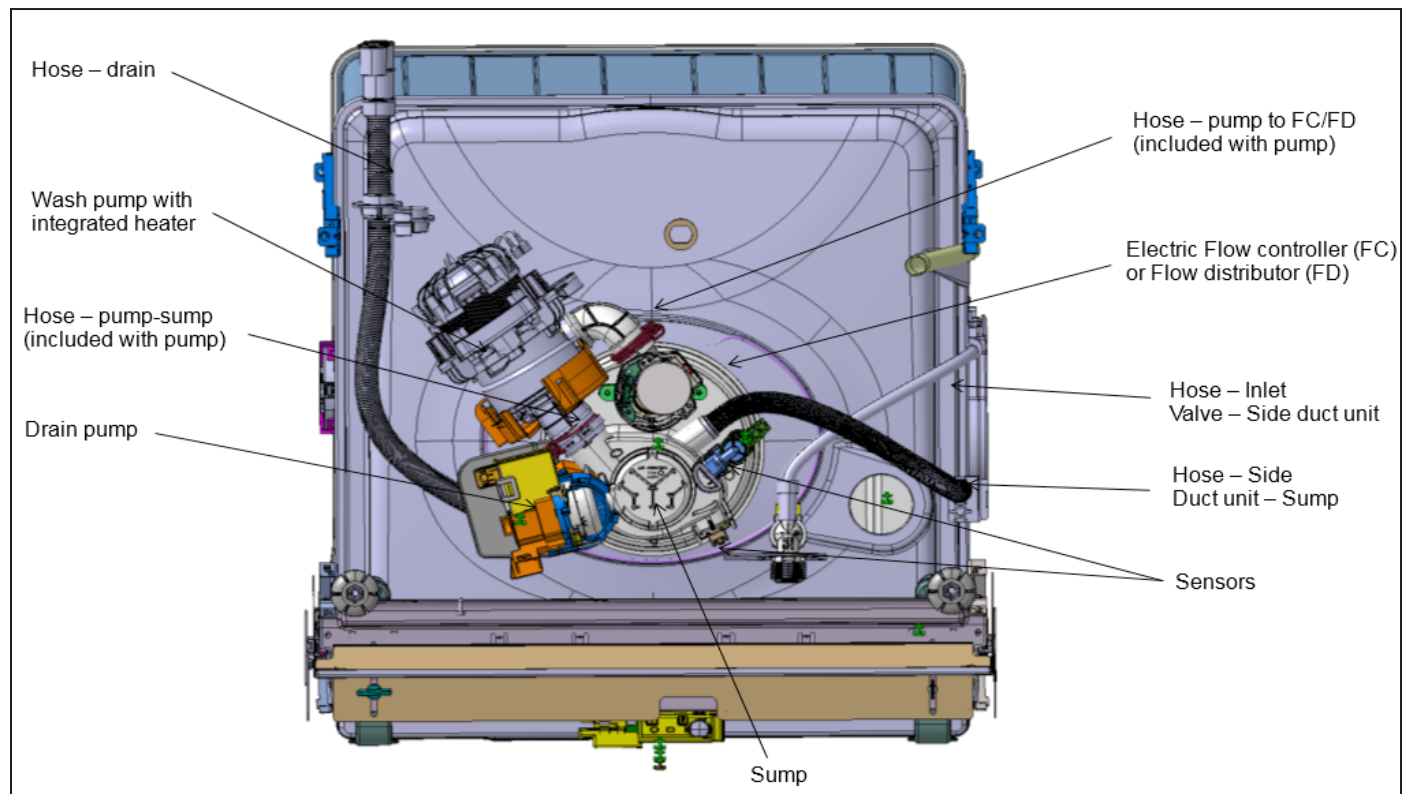
5.5 Grounding to Metal Cover



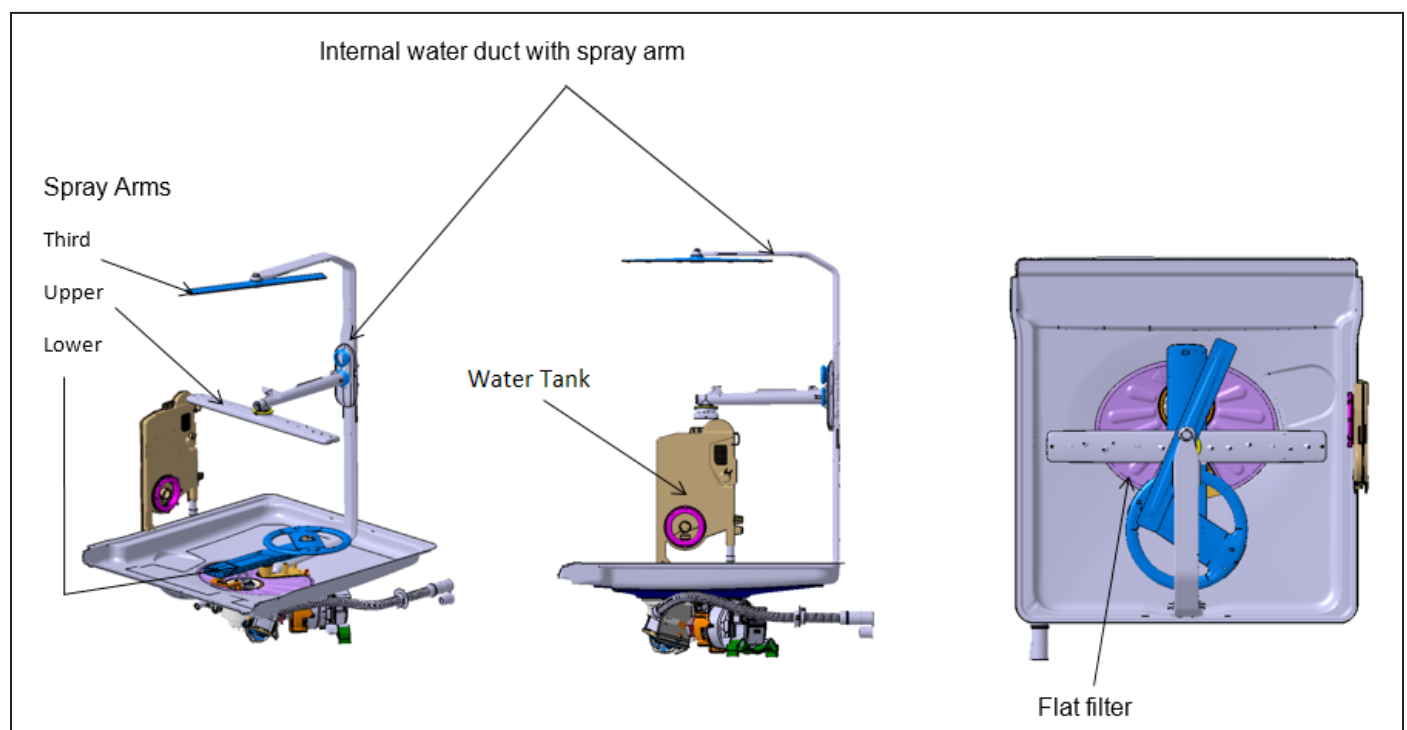
5.6 Water Circuit

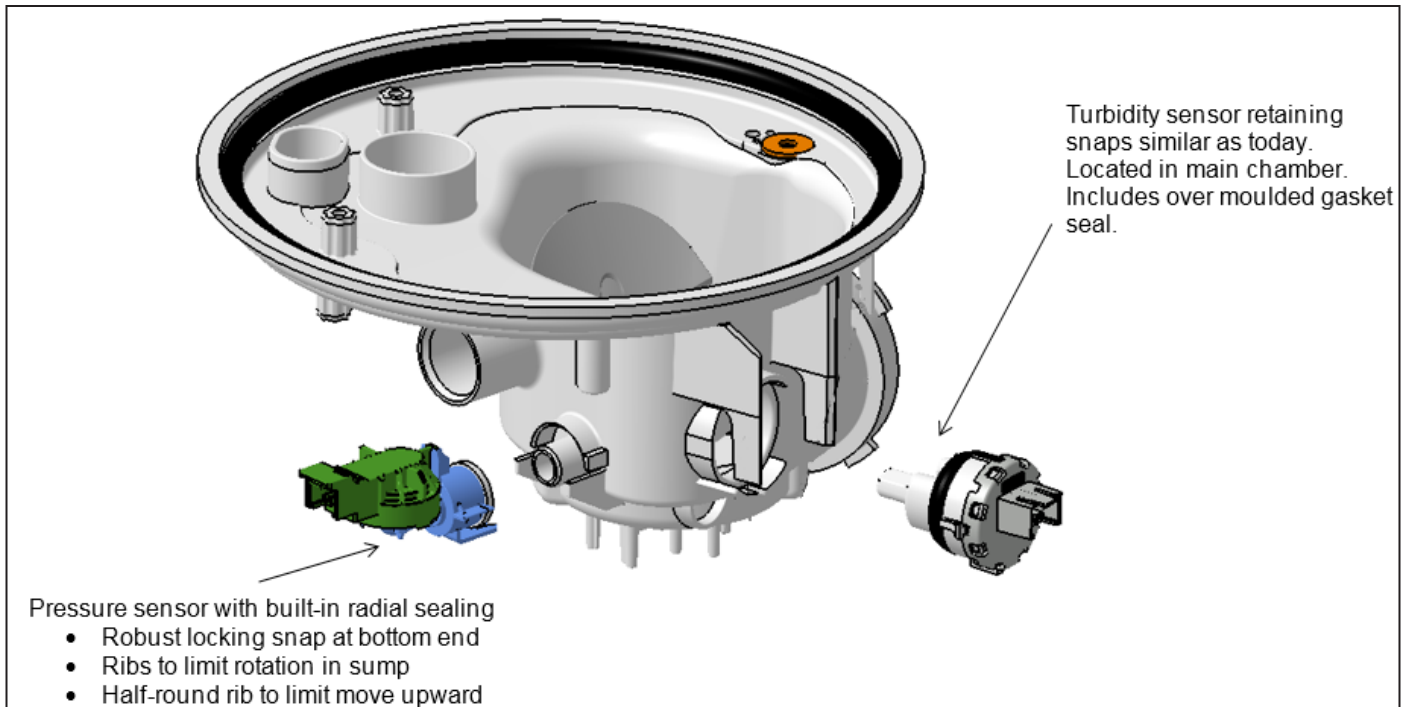


5.7 Hydraulic Circuit

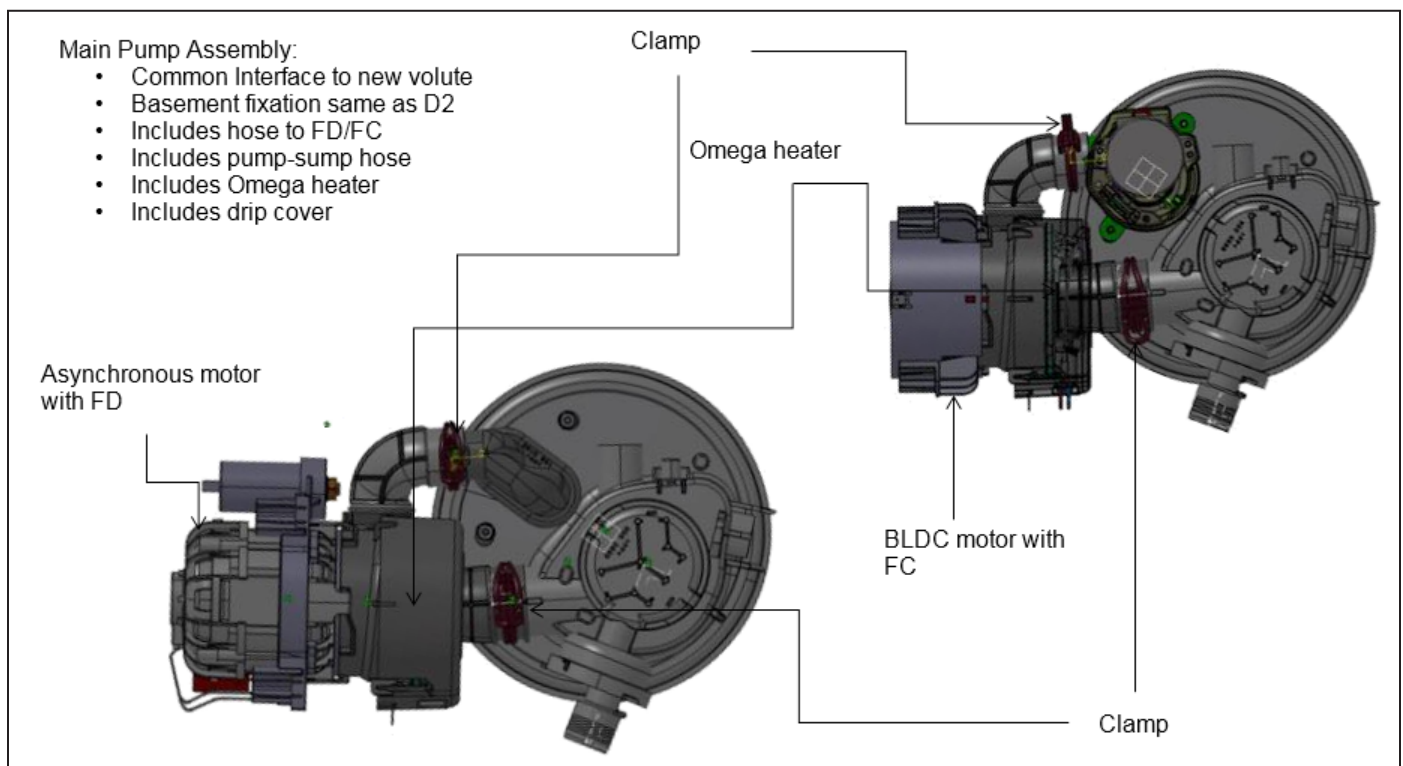


5.8 Hydraulic Circuit - Overview

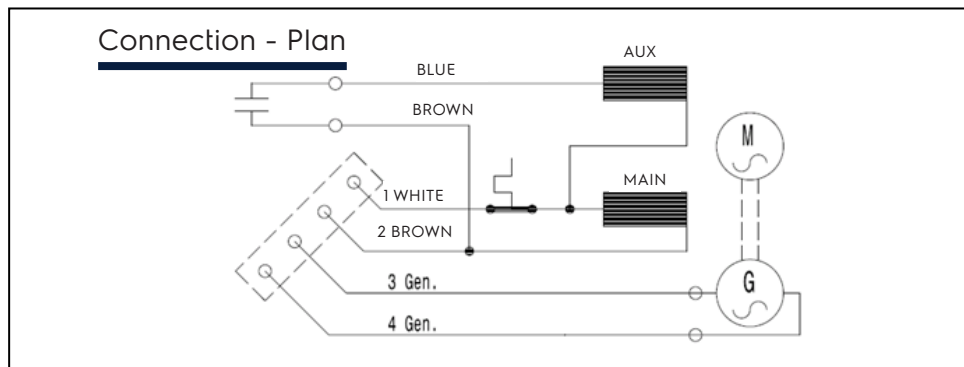




5.9 Sump Circulation Motor (Variants), Pump and Heater

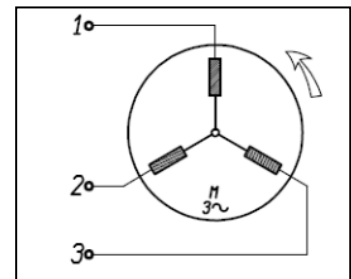


Single Phase Asynchronous Washing Pump Motor with FD

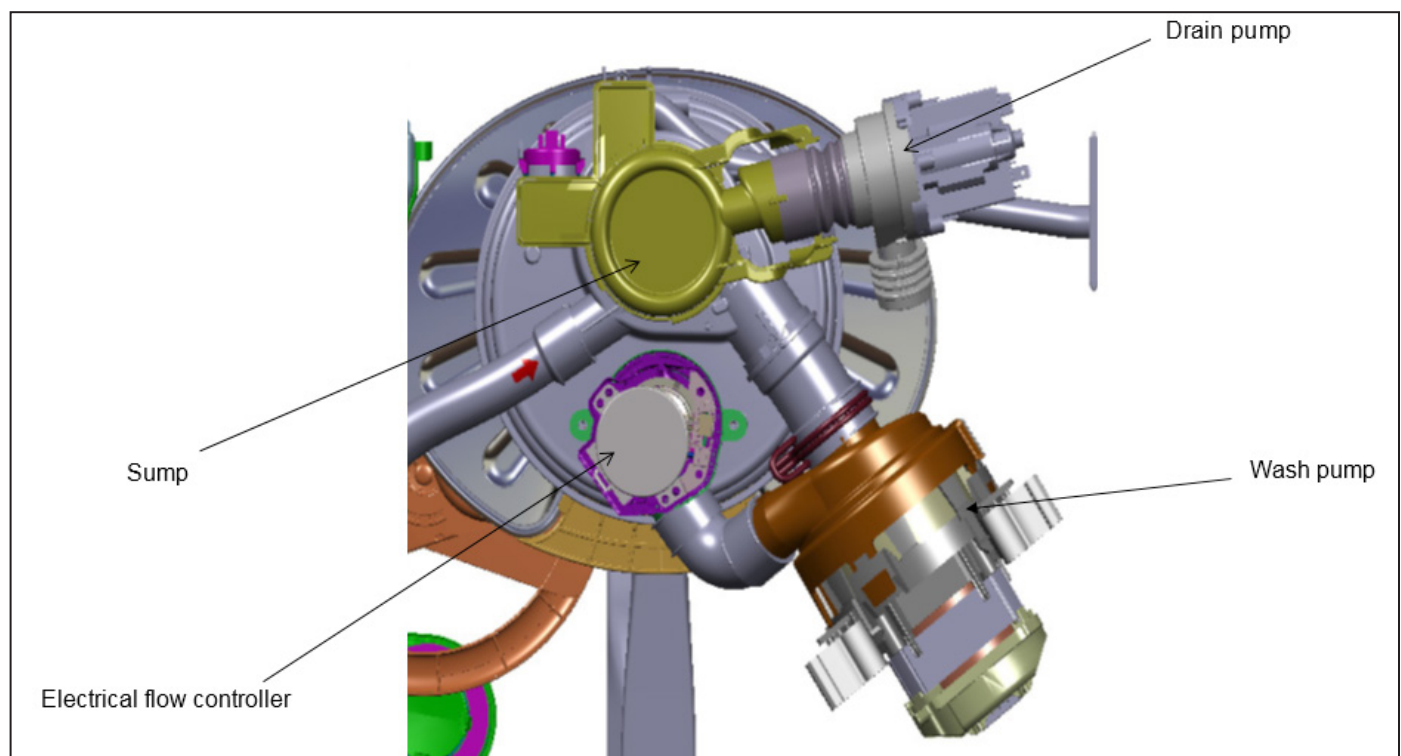


Three Phase Washing Pump BLDC Motor with FC

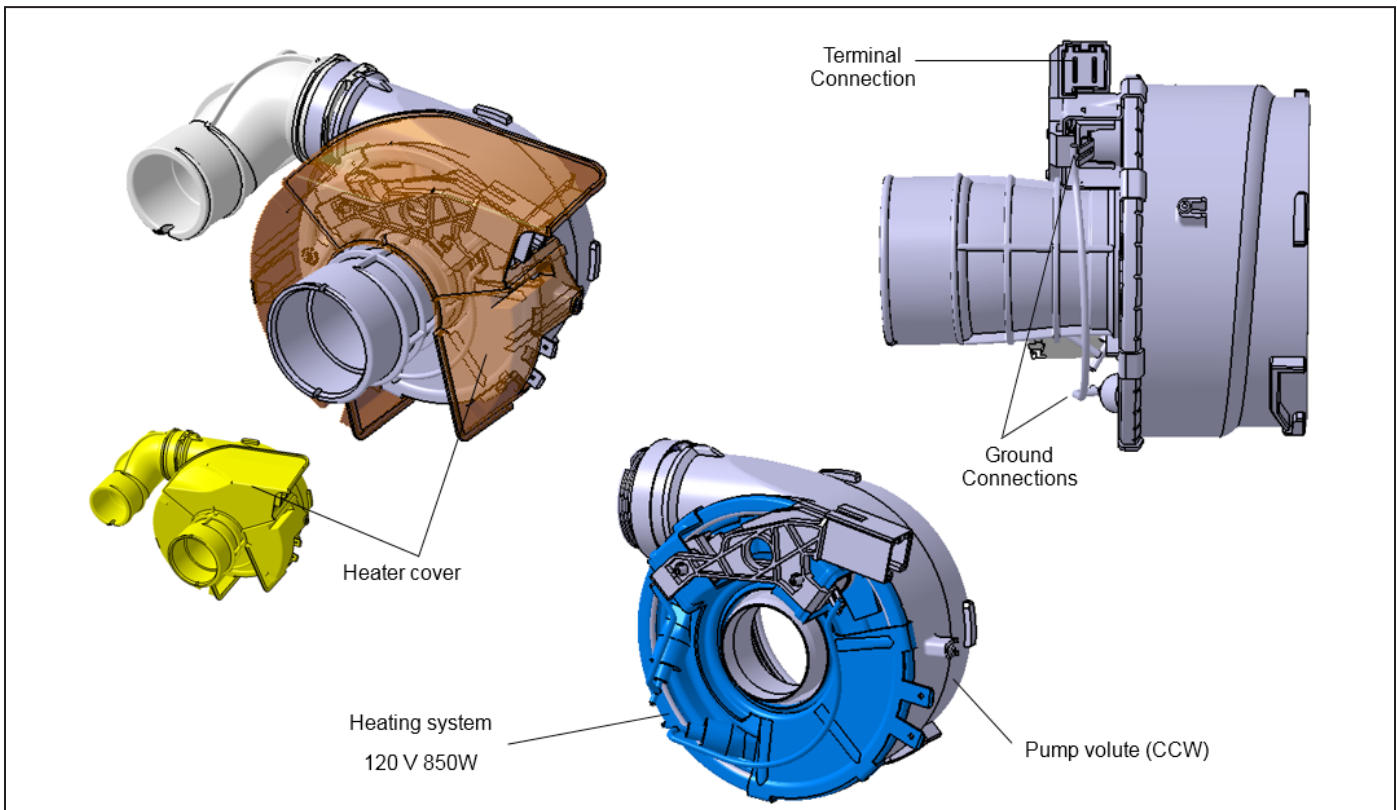
- Electrical detail
- 0-110 V 0-60 Hz Class F
- Resistance: 1-2: 56 ohms/2-3: 56 ohms/3-1: 56 ohms



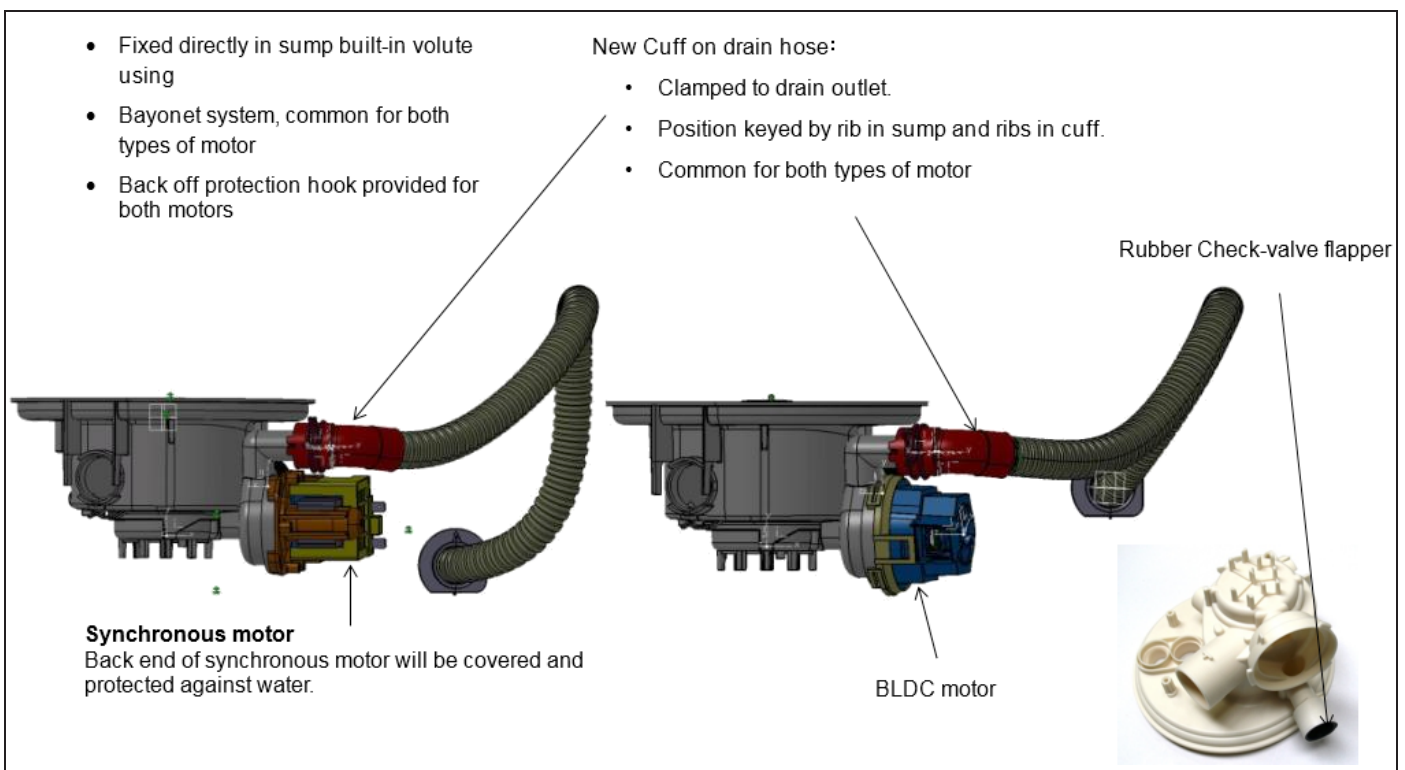
5.10 Wash Pump with Integrated Heater



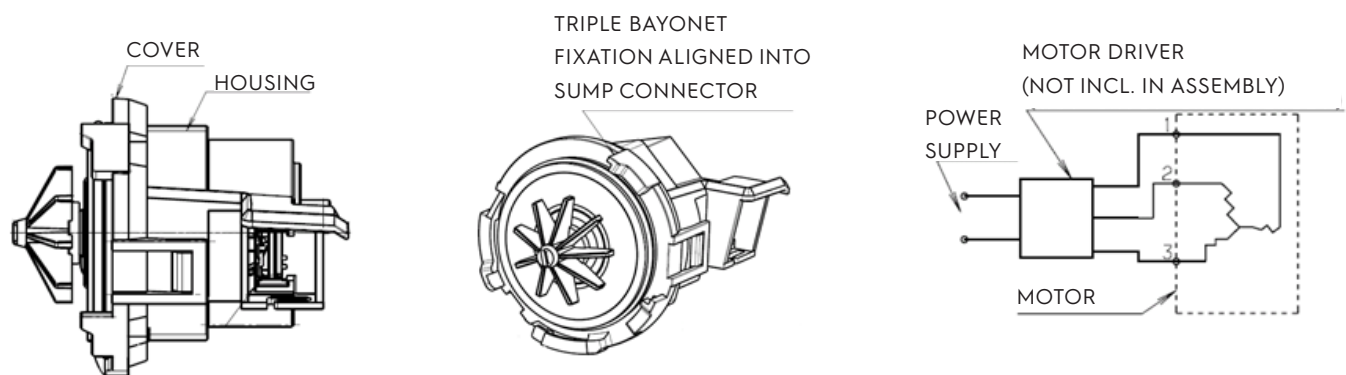
5.11 Omega Heater and Pump



5.12 Sump and Drain System (Motor Variants)



Three-phase Synchronous BLDC Motor

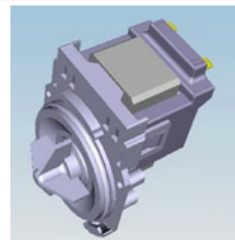
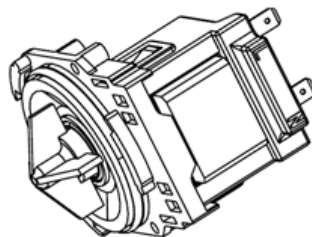


Voltage 110-140 Vrms 46.7 Hz

Power: 21 W -> resistance 46,5 ohms +/- 10%

Flow rate: 3.17 - 1.32 gallons/min at 39.37 inch of head

Single Phase Synchronous Motor

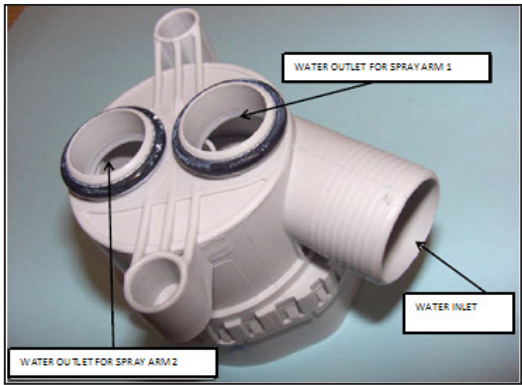


Voltage 120 V 60 Hz

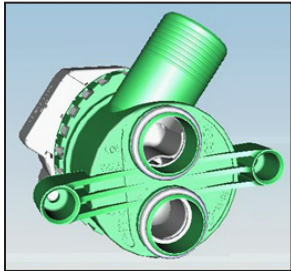
Power: 35 W -> resistance approx. 32.5 ohms

Flow rate: 3.96 gallons/min at 39.37inch of head

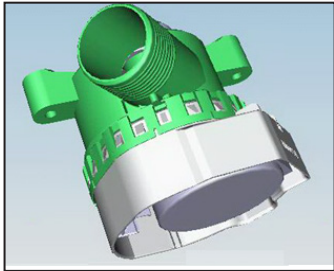
5.13 Flow Controller (On some Models)



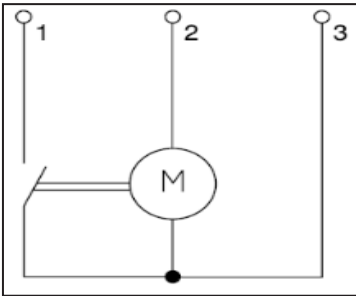
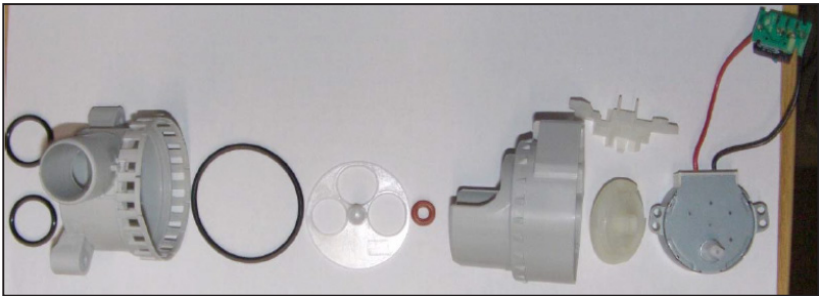
Synchronous motor



110/120V AC 60 Hz



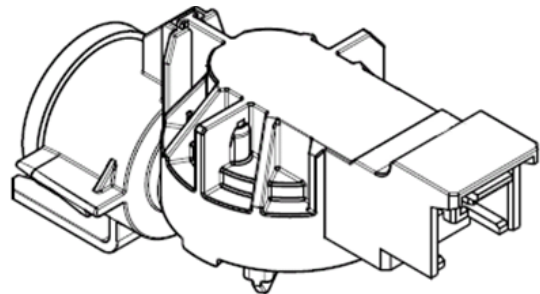
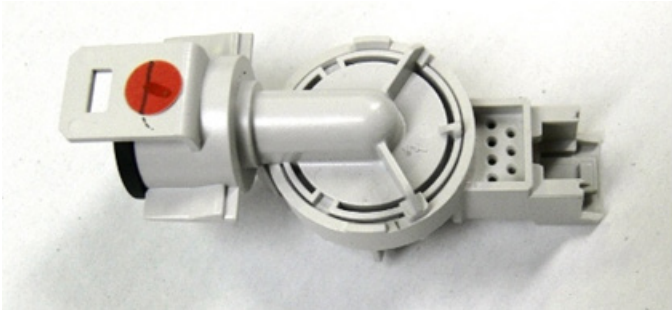
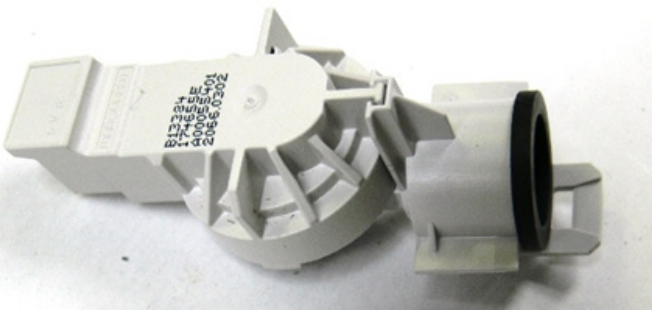
3rpmAnti-clockwise rotation



The flow controller controls the water flow towards the dishwasher spray arms.

The flow controller is designed to control the water flow towards the top spray arm only, bottom spray arm only or towards both spray arms.

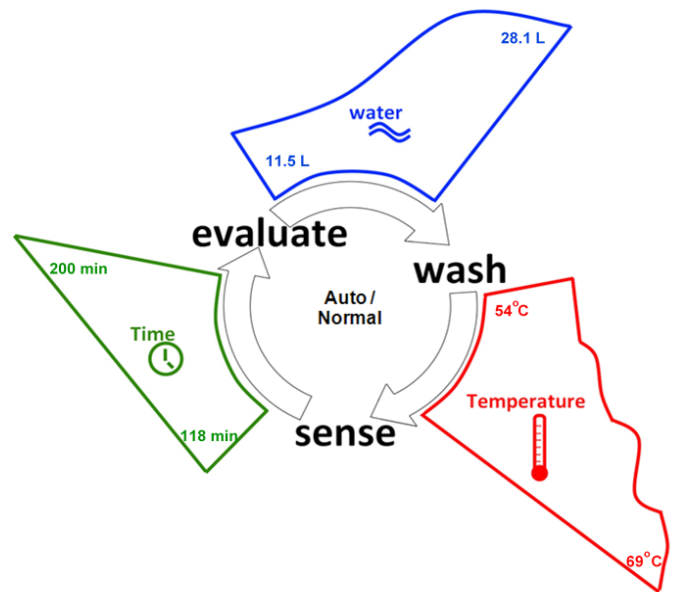
5.14 Pressure Sensor



PRESSURE MMWC/PA	FREQUENCY	TOLERANCE 20°C	TOLERANCE 70°C
-	44.3	+/- 3mmWC / 1%	+/- 5mmWC / 1.7%
75	42.16	+/- 3mmWC / 1%	+/- 5mmWC / 1.7%
150	40.0	+/- 6mmWC / 2%	+/- 8mmWC / 2.7%
225	37.77	+/- 9mmWC / 3%	+/- 11mmWC / 3.7%

5.15 Smart Sensor Technology

- The Smart Sensor Technology:
 - Washes the dishes and detaches the dirt continuously
 - In this way the turbidity sensor can detect the degree of dirtiness and will define, if additional rinses are necessary.
 - The measurements will be done continuously during the cycle.
- Temperature, water consumption and duration is adjusted to the degree of dirtiness.



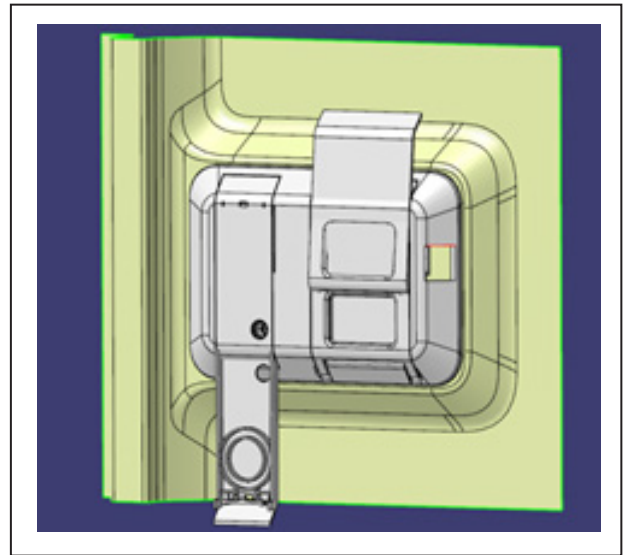
Comparison All Cycles

CYCLES	TIME (minutes)	Water Quantity (gallons)
china crystal	96 - 116	4.9
energy saver	86 - 93	4.3 - 7.69
heavy	129 - 189	7.13 - 8.1
normal auto	118 - 200	3 - 7.4
quick	30	4.5
rinse only	15	2.2
upper rack	52 - 128	3.5 - 4.3

5.16 Dispenser

The new dispenser includes the following features:

- Low voltage driving - 5VDC => Safety improvement
- Multiple dosage => Performance/Quality improvement
- Sliding lid => Performance/Quality improvement



5.17 Multi Dosage - Specification

• PERFORMANCE

The dosage of the rinse-aid has to be independent of the filling status of the container, as long as the refill indication is not reached. After indicating the refill minimum for another 2 dosage cycles, the nominal volume has to be guaranteed.

Dosage Procedure – Multiple Dosage

The first activation impulse opens the detergent lid; no rinse aid should be dosed into the tub.

With each further activation impulse a dosage volume of 1.5 ml has to be dosed into the tub.

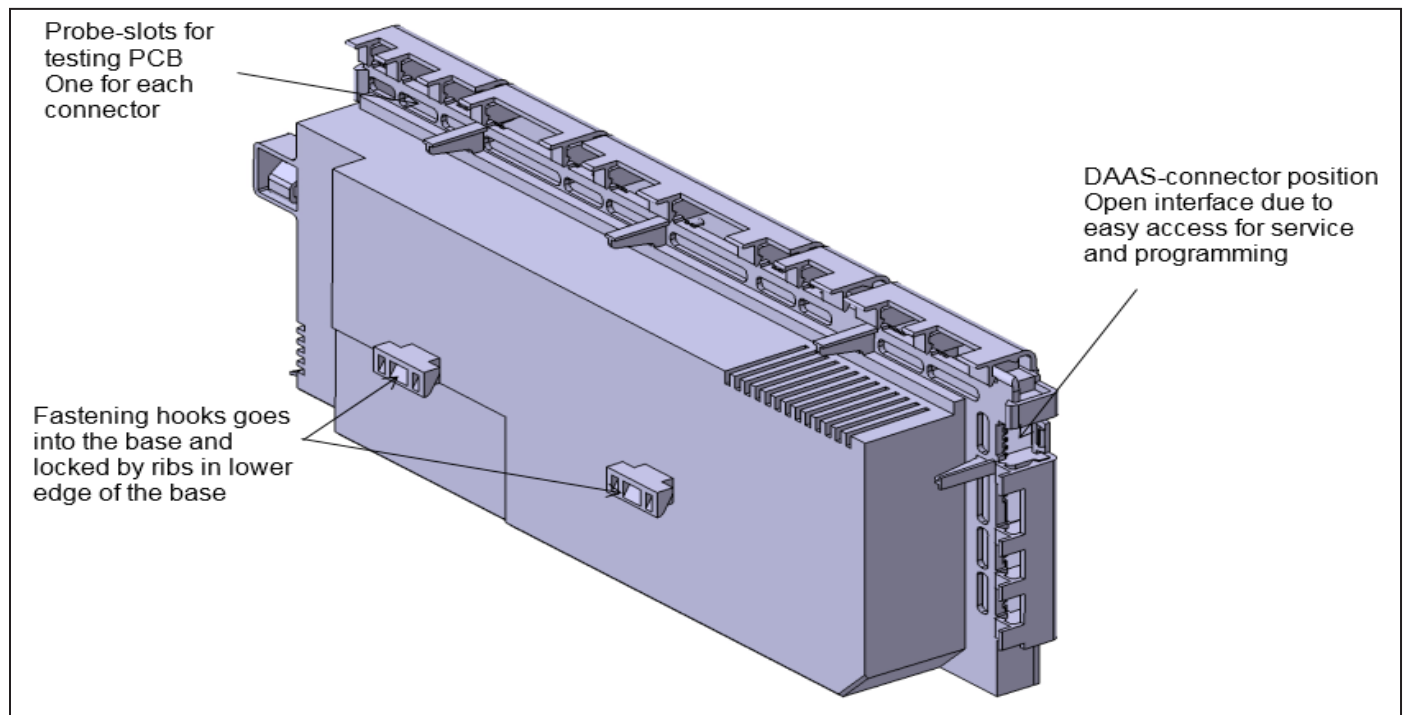
During Main Wash Phase – Detergent Lid Opening:

STEP	ACTION	TIME	PURPOSE
1	Activation of coil	0.3 S	Opening the detergent lid to release detergent

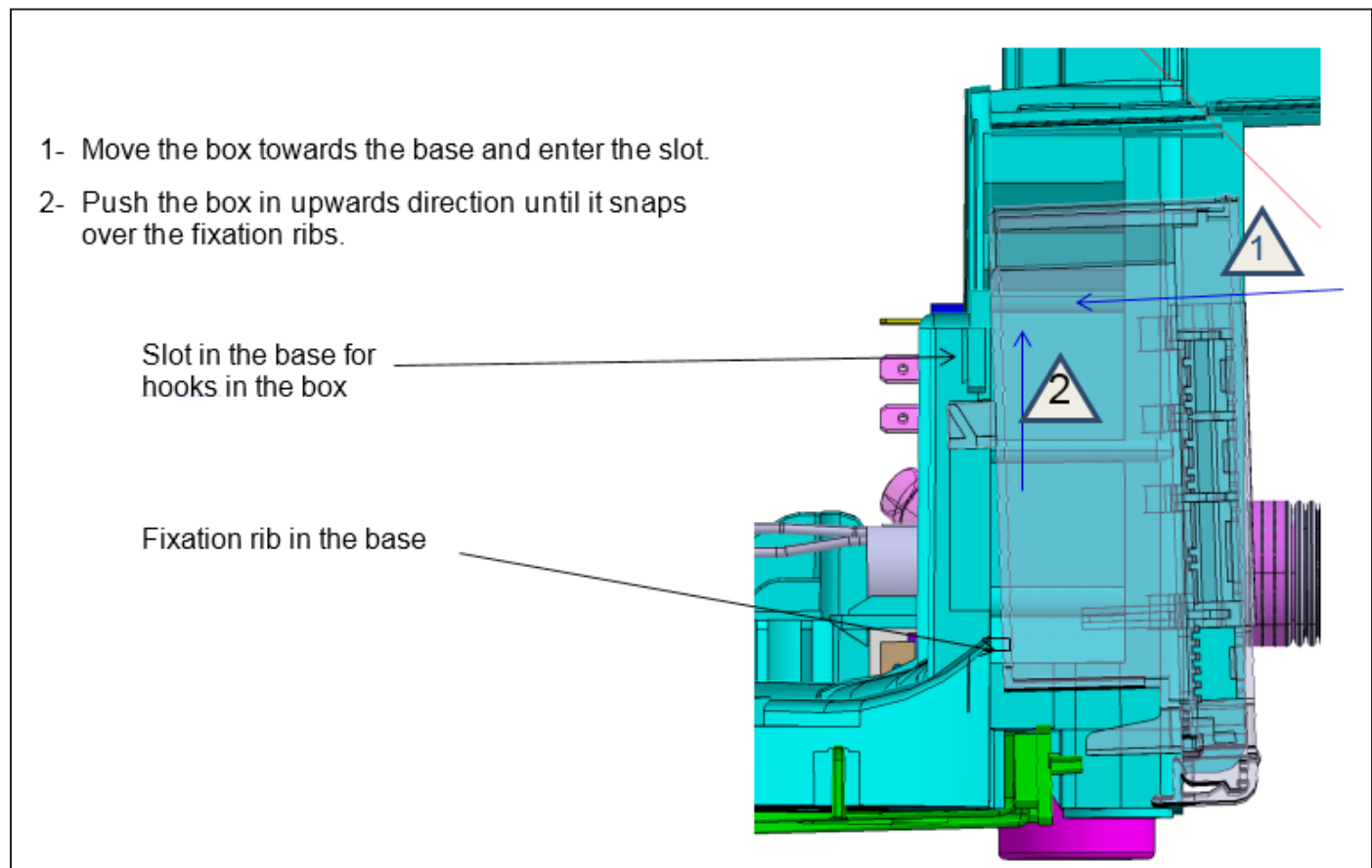
During Hot Rinse Phase – Rinse Aid Delivery:

STEP	ACTION	TIME	PURPOSE
1	Dosage check	–	Check if rinse aid is should be delivered If 0 -> no delivery the rinse aid delivery process should be stopped.
2	Activation of coil	5 S	Delivery of dose of rinse aid - 1,5 ml nominal
3	Pause	10 S	Refill of dosage chamber
4	Repeat from Step 2	–	Number of dosages according to set level

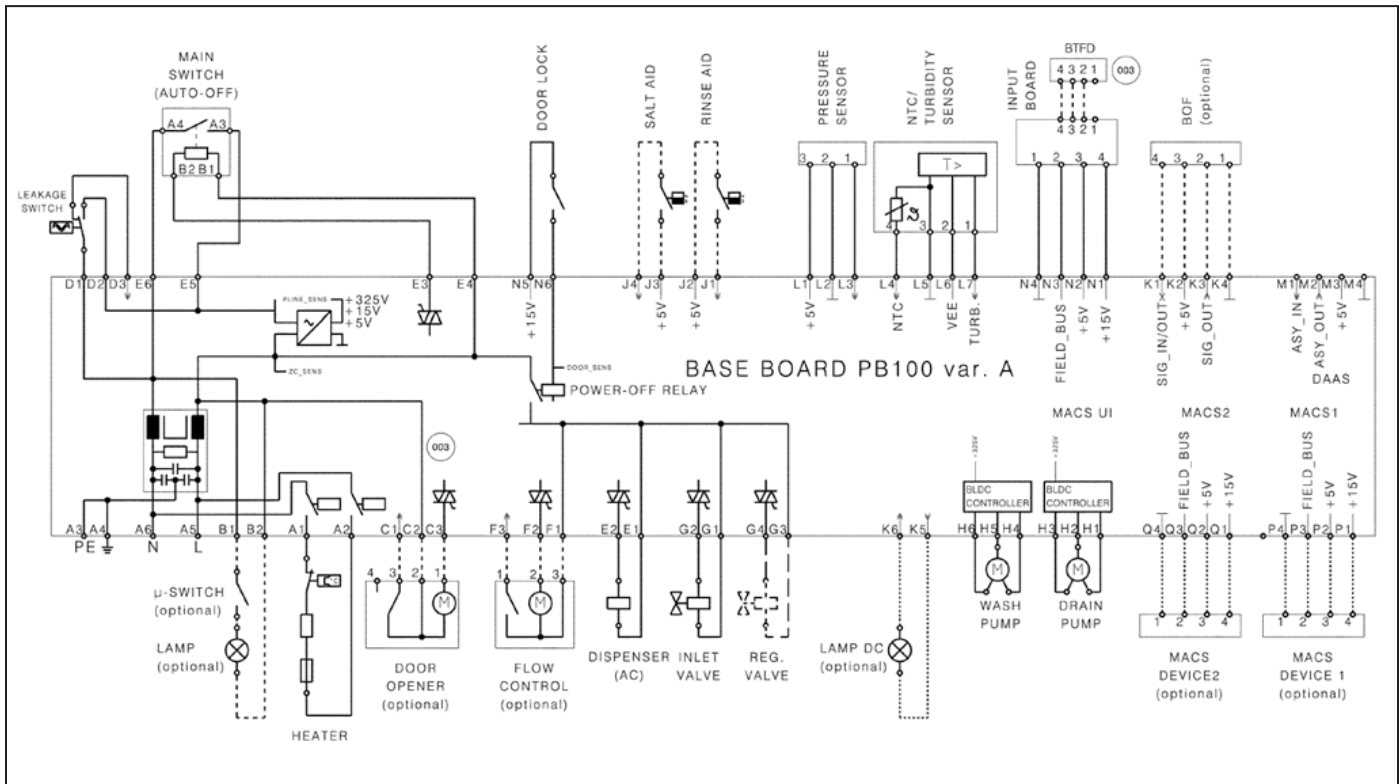
5.18 Control Board for PB100/PB200



5.19 Control Board Replacement



5.20 Example Wiring Diagram for PB100



5.21 Example Wiring Diagram for PB200

